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Attitudes and prosthodontic decision-making of General dental practitioners of Ahmedabad of The Shortened Dental Arch (SDA) Concept

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INTRODUCTION

The shortened dental arch (SDA) is defined as the minimum of four occlusal units that provide a functionally satisfying tool for adults with adequate adaptive capacity [(1)]. It is a problem-based approach to therapy that may result in reduced treatment costs while satisfactorily addressing the functional, biological, social, and psychological needs of the elderly [(2–5)]. Studies indicate that individuals in their later years who have a dentition reduced to one occlusive pair of teeth and four intact premolars may still be able to maintain masticatory function and acceptable levels of occlusal stability [(6)].

Oral rehabilitation is a service provided by modern dentistry to restore oral function both aesthetically and through the restoration of more traditional functions. But such treatment is costly, and it has to be covered by the patient, the public through social insurance programs, or a combination of the two. Additionally, comprehensive oral rehabilitation is time-consuming. Moreover, full mouth rehabilitation often requires a considerable amount of time. It can be difficult and demanding for patients at times, especially the elderly. It could also be difficult for the patient to maintain a technically complex prosthesis after treatment. The elderly and fragile may determine that having their dentition restored to its original state is not necessary due to financial constraints or the possibility that they will find it difficult to handle the demanding treatment. Therefore, the best course of action may be a treatment with modest goals that still meets the requirements for what can be considered adequate oral function [(7–11)].

The purpose of this thesis is to examine the opinions of General Dental Practitioners (GDPs) in Ahmedabad with respect to the Shortened Dental Arch (SDA) idea and prosthodontic decision-making factors.

Additionally, eating difficulties were linked to a lower number of occluding units and a higher risk of TMD [13–15, 16–17]. Research that contradicted the theory also linked SDA to a decrease in biting force [12]. [18] Although they largely offer RPD to their patients rather than incorporating it into their actual clinical practice, dentists who believe that this approach provides adequate function, aesthetics, and oral comfort appear to agree with the concept. Though more research with stricter inclusion criteria and a longer time frame is required, it seems that the SDA concept should be allowed to continue as a treatment option in the absence of contrary evidence [19].

Aim

How Ahmedabad dentists are applying the SDA concept and how patients respond to this type of care are still unknown. Thus, the aim of this research is to:
1. Evaluate dentists' understanding of the SDA concept and their work-related application of it.
2. Look at the preferred treatment plan that Ahmedabad dentists recommend for patients with SDA and the factors that influence this decision.

OBJECTIVES

1. To examine differences between various clinical groups and assess the general dentists' opinions of the Shortened Dental Arch concept in Ahmedabad.
2. Dentists evaluate the importance of several patient-related items when planning a treatment in a Shortened Dental Arch. Additionally, they compare common decision-making dimensions to alternative decision scenarios and pinpoint

explanatory variables for these dimensions.
3. To employ qualitative content analysis to look into the knowledge, attitudes, and treatment planning application of Ahmedabad general dentists regarding the Shortened Dental Arch concept.
4. To investigate the clinical prosthodontic decision-making process used by Ahmedabad General Dental Practitioners for dentitions with compromised molars.

HYPOTHESIS

1. Generated Hypothesis:
    - Dental professionals in Ahmedabad are generally aware of the SDA concept, but they rarely use it in clinical settings.
    - Compared to general dental practitioners, specialists were more knowledgeable about the idea and used it more frequently in their clinical practice.
    - According to this study's dentists, many dentists in Ahmedabad prefer to treat SDA patients with implants rather than acrylic RPD.
    - Patients with low incomes and those with health issues are more likely to receive SDA treatment recommendations.

2. Null Hypothesis:
    - There is no awareness about SDA concept among dentists practicing in Ahmedabad.

REVIEW OF LITERATURE:

1. **Chaulab et al (2017)[20]**: In a cross-sectional study conducted in 2017, Chaulab et al. looked at the effects of functional dentition (FD) concepts on the oral health (SOH) and daily functioning of 9564 adults in Brazil

who were between the ages of 35 and 44. The World Health Organization classification, evenly spaced teeth, esthetics and occlusion, and esthetics, occlusion, and periodontal status were the four definitions of FD that were taken into consideration. The study discovered a strong relationship between various FD definitions and the oral health satisfaction of Brazilian adults and how it affected their day-to-day functioning. Given that functional dentition affects more OHRQoL-related factors than FDWHO, a more thorough definition is required. Subjective considerations in public service decision-making could enhance patient quality of life and resource use. Patients utilizing public services would have a higher quality of life and the equity principle would be approached.

2. **Mostafa et al (2017)**[21]: According to Mostafa et al.'s 2017 systematic review, patients with short dental arches (SDA) may benefit from shortened dental arches as a prosthetic treatment option because it can reduce biological complications, improve oral health, and improve quality of life. Eight randomized controlled trials (RCTs) compared the use of different prosthodontic interventions to restore shortened dental arches to full arch lengths. According to the review, a promising treatment option for improving oral health and quality of life is the shortened dental arch. The outcomes supported the suggestion that patients who are partially edentulous consider SDA as a treatment option.
3. **Alexzandra et al (2018)**[22] : Alexzandra and others (2018) To comprehend the distribution of strain patterns and mandibular deformation associated with full arch dentition (FDA) and shortened dental arches (SDA) during occlusion, a finite element study was carried out. Using CT scan images, a 3D model of an adult cadaveric dentate mandible was produced; it was

devoid of trauma-related and pathological defects. The SDA model had the highest overall stress and strain, but the FDA model displayed the highest stress/strain values. The finite element method can be used to visualize the stress and strain of loaded mandible models with both shortened and full dental arches. Compared to the FDA model, SDAs experienced higher levels of stress and strain as a result of the loss of dental support.

4. **Ferreira RC et al (2019)[23]** : Based on reduced dentition and the use or non-use of dental prosthesis, a 2015 study conducted in Sao Paulo, Brazil, compared the Oral Health and Performance Quality of Life (OHRQoL) of adults aged 35 to 44. A probabilistic sample of data was used in the study, along with criteria like the presence of 21 or more teeth, a shortened dental arch, and a hierarchical functional classification system. Regardless of whether they wore a dental prosthesis, the results indicated that individuals with higher rates of missing teeth had lower OHRQoL. According to the study's findings, OHRQoL and preserving a functional dentition are compatible, even in the event of tooth loss.

5. **Walter et al (2020)[24]** : A precision attachment-retained partial removable dental prosthesis (PRDP) was utilized to replace the missing molars in the PRDP group of patients in a randomized controlled clinical trial that included patients missing one or more canines and premolars on each side. In the SDA group, the SDA was either restored with fixed dental prostheses up to the second premolars, or it was left intact. There were no statistically significant differences in PPD, but there were significant group differences in BOP and PLI, with the SDA group showing better results. The results

validate the SDA idea as a workable, reasonably priced, and goal-oriented therapeutic approach.

6. **Leal et al (2022)[25]** : An investigation into the relationship between tooth loss and TMD symptoms or diagnostic subgroups was carried out through a systematic review. Gray literature and six databases were used in the review process. To assess the level of bias risk, the Joanna Briggs Institute Critical Assessment was utilized. Six articles with a moderate risk of bias and five with a high risk were found in the review. Only one study found a correlation between joint sounds and pain and tooth loss. Neither the diagnostic subgroups nor the symptoms of TMD were found to significantly correlate. The review found no evidence to support the hypothesis that TMD symptoms are related to tooth loss.

7. **Funke et al (2023)[26]** : A review was done to find out if traditional prosthodontic rehabilitation (RPD) in older adults can be replaced with a shortened dental arch (SDA). Data extraction and analysis were possible for four reports from two RCTs. To find studies comparing the financial and nutritional outcomes of partially edentate adults receiving conventional RPD and SDA therapy for rehabilitation, a thorough search of electronic databases was carried out. Since conducting a meta-analysis was not feasible, the results were presented in a qualitative fashion. There was no appreciable difference in the nutritional status of patients who were rehabilitated using the SDA concept; however, the costs of treating patients in the RPD group were more than those of SDA treatment.

8. **Campos et al (2024)[27]** : Using databases such as PubMed/Medline, Scopus, Web of Science, SciELO, and Cochrane, this study mapped the definitions of abbreviated dental configurations and health outcomes used in association studies. The study concentrated on person-centered outcomes (oral and general health) related to dietary habits and reduced dental configurations (exposure) as well as health behavior. Clinical outcomes were categorized using the International Classification of Diseases and the International Classification of Functioning, Disability, and Health published by the World Health Organization. At least 20/21 teeth or the arrangement of the teeth, taking into account periodontal health, dental occlusion, and esthetics, were considered shortened dental configurations. A total of 153 studies looked at person-centered measures, and the most common causes were intake functions and orofacial complex disorders or diseases. The WHO's list of shortened dental configurations was the most widely used. Significant methodological variability and a wide range of health outcomes are indicated by the results.

METHODOLOGY

STUDY DESIGN: This cross-sectional study aims to collect data on dentists in Ahmedabad's understanding of SDA and whether or not they apply it in their day-to-day work.

SAMPLING TECHNIQUE AND SAMPLE SIZE: An anonymous online questionnaire will be used in this cross-sectional study to determine dentists' attitudes toward and level of knowledge regarding SDA. A questionnaire will be sent to all dentists who are registered with the Gujarat

State Dental Council of India (GDCI). The questionnaire will consist of 17 questions that address subjects like demographics, SDA benefits and drawbacks, awareness and application in dental practice, and preferred treatment modality.

INCLUSION CRITERIA: All dentists registered with the Gujarat state dental council of India.

EXCLUSION CRITERIA: Dentists not registered with Gujarat State Dental Council of India.

DATA ANALYSIS: Data will be examined using SPSS software.

RESULTS

The following are the anticipated outcomes:

• Although they hardly ever apply it in clinical settings, Ahmedabad's dental professionals are generally aware of the SDA concept.

• The dentists in this study stated that many dentists in Ahmedabad prefer to treat SDA patients with implants rather than acrylic RPD.

• Patients with low incomes and those with health issues are more likely to receive recommendations for SDA treatment.

• Specialists were more knowledgeable about the concept than general dental practitioners and used it more frequently in their clinical practice.

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